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The Hidden Bias of the Vienna Convention on the International Law of Treaties

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The process of treaty formation and reservations to multilateral treaties, enshrined in Articles 19-21 of the Vienna Convention on the Law of Treaties, establishes the principle that reservations are reciprocal. The treaty will be in force between a reserving state and a non-reserving state as amended by the reservation. Therefore a state that wants to exempt itself from a treaty obligation must let other nations escape that same burden. This paper presents an economic model of treaty formation and considers the effect of reciprocity on treaty ratifications among heterogeneous states. The model reveals that the Vienna Convention creates a strategic advantage for states with high costs and low benefits.

The regime governing treaty accession, ratification and reservations, introduced by the 1969 Vienna Convention, represents a change in international law. Prior to the Vienna convention, unilateral reservations introduced by states at the time of accession or ratification had to be accepted by all signatory states in order to become effective. To help facilitate multilateral agreements coming into force when signatory states introduce reservations at the time of accession or ratification, the Vienna Convention originated a more liberal approach to treaty reservations. If a state introduces a reservation, the treaty relationship between that state and any non-reserving state is modified according to the

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scope of the reservation: the exception or limitation claimed by the reserving state applies equally to both states.¹

In spite of this approach to reservations in the Vienna Convention, relatively few reservations are appended to multilateral treaties. The prevailing literature suggests that states value the integrity of the treaty more than their ability to tailor the agreement to their needs through the use of reservations.² This paper suggests that in spite of the apparent neutrality of the reciprocity principle, a hidden bias of the Vienna Convention creates a systematic advantage for states with high costs and low benefits. The analysis sheds light on the troubled evolution of Article 21 of the Vienna Convention, and explains why at times economically disadvantaged states favored the reciprocity principle adopted by the Vienna Convention.

Section 1 of this paper discusses the rules governing the process of treaty reservation and the change brought about by the Vienna Convention on the Law of Treaties. Section 2 presents an economic model of treaty reservations to reveal the latent bias created by heterogeneous states under Article 21 of the Vienna Convention. Section 3 summarizes the main findings.

1. RESERVATIONS UNDER THE VIENNA CONVENTION OF THE LAW OF TREATIES

The Vienna Convention on the Law of Treaties provides the fundamental framework that governs modern treaty-making.³ For the most part it codifies preexisting customary practice governing the formation, entry into force, and interpretation of treaties, as well as the procedural rules for treaty administration.⁴ However, on the specific issue of treaty reservations, the Vienna Convention introduces a new regime which substantially changes preexisting international customary law.

¹ The precise language of Article 21(1) of the Vienna Convention on the Law of Treaties follows: 1. A reservation established with regard to another party in accordance with articles 19, 20 and 23: (a) modifies for the reserving State in its relations with that other party the provisions of the treaty to which the reservation relates to the extent of the reservation; and (b) modifies these provisions to the same extent for that other party in its relations with the reserving State.

² Parisi (1998), Parisi and Ghei (2003), and Parisi and Sevcenko (2003) suggest that the reciprocal effects of unilateral reservations introduced by Article 21 (1) of the Vienna Convention create a valuable constraint against strategic reservations.

³ The Vienna Convention on the Law of Treaties concluded May 23, 1969 and entered into force Jan. 27, 1980, culminating an effort which began in 1949. Vienna Convention on the Law of Treaties, 1155 U.N.T.S.

⁴ The Vienna Convention combines codification of customary international law and creation of new legal norms through progressive development, although the line between the two is not necessarily clear.

1.1. RESERVATIONS TO A TREATY UNDER PRIOR CUSTOMARY INTERNATIONAL LAW

A fundamental premise of international law is that a state cannot be bound to a treaty rule without its consent. The traditional unanimity rule requires all states to adopt the text of a multilateral treaty. This ensures that no state participating in treaty negotiations is bound by any treaty or part of a treaty that it finds unacceptable, and any treaty coming into force has the clear backing of all its constituent parties, laying a strong foundation on which to build compliance. Until the late nineteenth century, this consent principle also strictly applied to the process of treaty accession, ratification, and reservation.⁵ The rule governing unilateral reservation closely followed the principles of private contract law adopted by most legal systems. A state reservation to a treaty was construed as a unilateral amendment of the original agreement which should not be effective against other parties without their consent. Unanimous consent for the admissibility of treaty reservations was then regarded as the logical corollary of the unanimous consent requirement for treaty formation.

Strict application of the unanimity rule gradually started to lose support in the post World War I era. Under this regime a state not wishing to ratify a particular treaty provision had the limited choice of accepting the treaty as a whole or not being a party to the entire agreement. The leading European nations continued to support the rule that a state cannot attach a reservation to a treaty unless all parties agree to it. Other nations, however, began to recognize that the unanimity principle for treaty reservations could become unworkable in a world characterized by broader participation of international actors, such as that which followed the First World War and the establishment of the League of Nations. Multilateral agreements involved growing numbers of nations, thus increasing the difficulties and costs of treaty negotiation. This brought about a need for flexible rules that could facilitate the formation of multilateral agreements even in the face of reservations in the ratification of treaties by signatory states. An important event that opened the door to the modern formulation of Article 21 is India's 1959 request for accession to the Inter-Governmental Maritime Organization, which it originally submitted in

⁵ Malkin (1926:141-162) provides numerous examples of how the unanimity principle developed through the practice of states in the formation and ratification of international treaties, with reference to the International Sanitary Conventions held in Venice in 1892, Dresden in 1893, and Paris in 1894. Sinclair (1984:55) provides an additional example of strict application of the unanimity principle in various pre-World War I treaties, as shown by the opposition to unilateral reservations in the Hague Peace Conference of 1899.

1948. The Secretary General wanted to apply the unanimity rule.⁶ India's specific case was resolved in the General Assembly's Resolution 1452 (XVI). The Indian addendum to its ratification was labeled a "policy declaration," avoiding a clash with the unanimity rule.⁷

There was no easy solution to the problem of reservations to international treaties. While some leeway for reservation was recognized necessary, the question was left open on how to limit its scope. The ability to introduce unilateral reservations without requiring consent from other states would unfairly tip the balance in favor of reserving states. In turn, this would trigger a strategic and frequent use of reservations, which would undermine the stability of treaty agreements. On the other hand, the very existence of a treaty agreement should not be discouraged by excessively strict rules on reservations. International rules on treaty formation should foster treaty preservation and avoid situations where a minor disagreement over some technical provision undermines the treaty as a whole.

1.2. THE ORIGINS OF ARTICLE 21 OF THE VIENNA CONVENTION

One of the most difficult issues to resolve during negotiations of the Vienna Convention was finding an appropriate balance between flexibility and stability in treaty formation.⁸ While remaining faithful to the general principle of *pacta sunt servanda* (agreements must be kept), the Vienna Convention (Articles 19-23) addressed unilateral reservations by moving away from the unanimity principle and appealing to the concept of reciprocity, a basic and universally accepted principle of international law.⁹ This effectively balanced the conflicting needs for flexibility and integrity that surfaced during the previous reservations regime.¹⁰ The argument for a more liberal regime rested on the possibility that most reservations would not incorporate substantive changes to

⁶ Documentation is available at GAOR, 14th session, annexes, a.i. 65 (1959). The position of India is described in A/4188 and that of the Secretary General in A/4235. The debate revealing the different positions of states on the issue of reservations is available at A/4311 paras 5-24.

⁷ According to Rosenne (1989), "the 1959 debate in the General Assembly is important for its strong reaffirmation that there was to be no return to the absolute unanimity practice in any guise," although no further movement forward occurred until the Waldock Commission of 1962.

⁸ For a more extensive description of the development of the regime of treaty reservations from the 19th century to the adoption of the Vienna Convention on Treaties, see Sinclair (1984) and Rosenne (1989).

⁹ Reciprocity is the foundation of diplomatic immunity, the laws of war, and a mechanism for dealing with breaches of treaty provisions. For a general analysis of reciprocity in international law, see Parisi and Ghei (2003).

¹⁰ The difficulty of finding a viable solution to this issue is evidenced by the debate and work that preceded the Vienna Convention. For further historical analysis, see Parisi and Sevchenko (2003).

treaties, but would be triggered by incompatibilities of procedural or jurisdictional provisions of the treaty with constitutional or administrative rules of the signatory states. Allowing reservations in such cases would allow states to participate in certain multilateral treaties where they otherwise would not.

The Vienna Convention concerning reservations (Articles 19-23) represent an innovation in preexisting international customary law. It defines a reservation as “a unilateral statement, however phrased or named, made by a State when signing, ratifying, accepting, approving or acceding to a treaty, whereby it purports to exclude or to modify the legal effect of certain provisions of the treaty in their application to that State.” Article 19 allows states to include reservations in their acceptance of treaty obligations, unless the treaty itself expressly forbids reservations, or the reservation is incompatible with the object and purpose of the treaty. Article 20 outlines the circumstances under which reservations must be accepted by the other parties; if a state does not object to a reservation from another state within a set amount of time, its silence is construed as tacit acceptance. An objection to a reservation does not, however, preclude entry into force of treaty between two states. Rather, Article 21 allows states to tailor relations between them through the mechanism of reciprocity.

The reciprocal effects of unilateral reservations provide protection against strategic reservations. Unilateral reservations under Article 21 become a “double-edged sword,” as other states are also exempt from treaty obligations to the extent of the reservation. Given reciprocal effects of reservations against the reserving state and the applicability of the original treaty obligation between non-reserving states in their relations with one another, Article 21 often leads a multilateral treaty obligation into a network of fragmented bilateral treaty obligations.

1.3. TREATY RESERVATIONS UNDER THE VIENNA CONVENTION

Under Article 14 of the Vienna Convention, a treaty subject to ratification does not become binding until after it is approved by the legislature. Under Article 15 accession is the means by which a state becomes a party to an existing treaty to which it is not an original signatory. The Vienna Convention allows states who ratify or accede to a treaty to introduce reservations on specific provisions via unilateral statements. With a reservation, a state can omit or modify treaty provisions, thus excluding itself from certain terms of the treaty or varying the legal effect of such terms. The treaty, as modified by the reservation, enters into force between the reserving state and states that do not object to the reservation. As for states who do not accept the reservation, neither the reserving state nor the non-reserving states are bound by *omitted* provisions. The objecting state may also declare the entire treaty not in force between the two countries. Further, non-reserving states remain bound to the original treaty

provision in their relations with one another. Similarly, *modified* provisions apply to all bilateral relations of the reserving state with a non-reserving state, while the original treaty provision governs the relations among non-reserving states.

Although not explicitly specified in the Vienna Convention, the mechanism of treaty reservation should permit more than one state to introduce reservations to the treaty. In a stylized setting in which several states can introduce reservations to the same treaty provision with a single dimension of commitment, the effects of the states' reservations should be distinguished as follows: (i) reserving states are bound to the treaty as modified by their respective reservations in their relations with non-reserving states; (ii) reserving states are bound to the treaty as modified by the greater of the reservations in their relations with one another; and (iii) non-reserving states are bound by the original treaty in their relations with one another.¹¹

2. TREATY RESERVATIONS AMONG HETEROGENEOUS STATES

Articles 19-21 of the Vienna Convention consider the effect of a state's reservations in a multilateral treaty setting.¹² As discussed earlier, when a state introduces a reservation to a treaty at the time of accession or ratification, it creates multiple bilateral implications and transforms the unilateral reservation into multiple bilateral changes in treaty content. The treaty is modified by the reservation between the reserving state and non-reserving states. Between the reserving state and another reserving state, the treaty is modified by the lower level of ratification agreed to by these two states. Lastly, unilateral reservations do not prejudice application of the original treaty provisions among non-reserving states.

The multiplicity of bilateral effects created by unilateral reservations to a treaty makes it necessary to first study how reservations affect interactions between two states, taking the underlying treaty as exogenous. Consider the

¹¹ The proposition that reserving states are bound to the treaty as modified by the greater of the reservations follows from the reciprocal effects of reservations under Article 21 (1)(b) whenever the level of treaty ratification is single-dimensional (e.g., level of abatement, expenditures in enforcement).

¹² Reservations have no reason to exist in a simple two-country setting with a single dimension of treaty commitment. States negotiating in this environment know that reservations are possible and therefore negotiate substantive terms of the treaty, excluding the opportunity for later unilateral reservations. This makes the final terms more transparent, ensuring that neither side is surprised by the other's reservations. For this reason, Vienna Convention Article 20(4)(c) implies that unilateral reservations are not allowed in a bilateral treaty.

impact of unilateral reservations between any two states who are parties to a multilateral treaty. This serves as a building block for subsequent analysis of the multilateral effects of unilateral reservations, where more than one state introduces reservations.¹³ We consider heterogeneous states facing different cost-benefit ratios from treaty implementation. These different cost-benefit ratios can be interpreted as the states' respective comparative advantage in international cooperation. For example, poorer or developing nations may face higher cost-benefit ratios in treaty implementation, or the well-being of large and powerful nations may depend less critically on international cooperation.

2.1. BILATERAL INTERACTION BETWEEN STATES H AND L

To study the bilateral effects of unilateral reservations in a multilateral treaty, consider two representative states H and L . Each state benefits from the other state's acceptance and ratification of the treaty, and incurs costs when ratifying the treaty and undertaking obligations toward the other state. Although the Vienna Convention applies to both accession and ratification of treaties, we refer to the ratification choice as a strategy variable and denote it as s , where $s \in [0,1]$. Ratifying states can accept treaty obligations in full or introduce limitations in the form of unilateral reservations. Higher levels of s imply greater willingness of the state to ratify and undertake treaty obligations. A reservation creates a discrepancy between the original treaty obligation and the ratified treaty obligation. A larger reservation (indicated by a smaller value of s) implies a lower level of ratification of the treaty. The level of ratification strategy extended from state H (L) to state L (H) is denoted by s_H (s_L).

The benefit enjoyed by state H from s_L , the ratification level of the treaty by state L , is $b_H s_L$.¹⁴ The cost incurred by state H for its chosen level of ratification s_H is $a_H s_H^2$. The payoff for state H from entering into a treaty relationship with state L is then given by $P_H^L = b_H s_L - a_H s_H^2$.¹⁵ We assume that $b_H > a_H$ so that some positive level of treaty ratification is preferred to

¹³ The multilateral problem facing an individual state can be viewed as the aggregation of multiple bilateral problems faced by the state. Thus, the bilateral problem is the typical problem confronting a representative state in a multilateral treaty relationship.

¹⁴ This model is adopted from the asymmetric nonlinear model developed in Fon and Parisi (2003a). The functional forms of benefits and costs ensure that marginal cost eventually exceeds marginal benefit. It is assumed that marginal benefit is constant and that marginal cost is increasing.

¹⁵ The subscript refers to the state. The superscript L is redundant here but this notation makes it easier to generalize when each state interacts with more than one state.

no treaty ratification. Likewise, the payoff for state L when entering into a treaty relationship with state H is $P_L^H = b_L s_H - a_L s_L^2$ where $b_L > a_L$.

For now, assume that state H chooses a level of ratification expecting *unconditional reciprocity* from state L through the treaty. That is, state H expects state L to ratify the treaty at the same level: $s_L = s_H$. Confronted with the problem to maximize $b_H s_H - a_H s_H^2$, state H chooses ratification level $s'_H = b_H / 2a_H$. Likewise, assuming that state H reciprocates the level of ratification, state L chooses $s'_L = b_L / 2a_L$ to maximize $b_L s_L - a_L s_L^2$. Thus, if both countries assume unconditional reciprocity the optimal levels of ratification are:

$$(1) \quad s'_H = b_H / 2a_H \quad \text{and} \quad s'_L = b_L / 2a_L$$

If states were allowed to introduce unilateral reservations without the reciprocity effect created by Article 21, they could choose any ratification level lower than the existing treaty obligation. Each state is tempted to reduce the level of treaty ratification and take advantage of the other state's compliance with higher levels of treaty obligations. The resulting level of ratification for state H is $s_H = 0$ since $s_H = 0$ maximizes $P_H^L = b_H s_L - a_H s_H^2$ given any s_L . Likewise, the level of ratification for state L is $s_L = 0$ given any s_H . Thus, without the reciprocity constraint imposed by Article 21, the Nash equilibrium is $(s_H = 0, s_L = 0)$. This constitutes a prisoner's dilemma since both states would benefit by settling on a positive level of treaty ratification.

The reservation mechanism set forth by the Vienna Convention has two important characteristics. One is reservation itself - a state may ratify or accede to a treaty while choosing a level of obligation lower than that specified in the original treaty. The second is that reservations have reciprocal effects under Article 21. Combining these two factors, consider the *conditional reciprocity* problem that a state confronts. If the level of ratification of the other state is below the treaty obligation s_T , given reciprocity, a state expects that the smaller level of ratification chosen by the two states becomes the binding level of reservation.

In particular, assume that state L introduces a reservation level of ratification less than the treaty obligation: $s_L \leq s_T$. The problem confronting state H , given the reciprocal effects of the introduced reservation, depends on whichever state chooses the smaller ratification level:

$$(2) \quad \max_{s_H} \pi_H^L = \begin{cases} b_H s_H - a_H s_H^2 & \text{if } s_H \leq s_L \\ b_H s_L - a_H s_L^2 & \text{if } s_H \geq s_L \end{cases} \text{ given } s_L \leq s_T$$

Recall that the optimal level of treaty ratification with unconditional reciprocity is s'_H . Suppose that state L chooses a level of ratification s_L that is less than the privately optimal s'_H for state H . While state H desires a higher level of mutual treaty obligation, the best it can do is to take advantage of the reciprocal effect of state L 's reservation and invoke the same level of reservation. If instead state L chooses a level of ratification s_L greater than the privately optimal s'_H for state H , then state H is better off choosing s'_H and will not agree to a ratification level higher than s'_H . Hence, given the ratification level s_L and reciprocity induced by Article 21, the reaction function of state H can be written as follows:

$$(3) \quad s_H = \begin{cases} s_L & \text{if } s_L \leq s'_H, s_L \leq s_T \\ s'_H & \text{if } s'_H \leq s_L, s_L \leq s_T \end{cases}$$

Likewise, assuming $s_H \leq s_T$ and given the ratification level s_H , the reaction function of state L under reciprocal reservation is given in the following:

$$(4) \quad s_L = \begin{cases} s_H & \text{if } s_H \leq s'_L, s_H \leq s_T \\ s'_L & \text{if } s'_L \leq s_H, s_H \leq s_T \end{cases}$$

Assume that state H is the high-cost state, with a cost-benefit ratio higher than the low-cost state L : $a_H/b_H > a_L/b_L$. Given that state H is higher cost, the optimal levels of ratification under unconditional reciprocity satisfy $s'_H < s'_L$. That is, the high-cost state's choice with unconditional reciprocity is always lower than the low-cost state's choice.

If a state's optimal level of ratification under unconditional reciprocity exceeds the level of obligation under the original treaty, the state has no opportunity to introduce an over-provision and becomes a non-reserving state. On the other hand, if the state's optimal level of ratification under unconditional reciprocity is less than the treaty level of obligation, the state is reluctant to ratify the treaty in full, choosing to introduce a reservation and become a reserving state. With

unconditional reciprocity, the high-cost state H always selects a lower ratification level than the low-cost state and thus is more likely to be the reserving state for any treaty obligation. More generally, given any treaty obligation s_T , if $s'_H < s_T \leq s'_L$, state H is a reserving state and state L is a non-reserving state. If $s'_H < s'_L < s_T$, then both states are reserving states. Finally, if $s_T \leq s'_H < s'_L$, then H and L are both non-reserving states.

2.2. TREATY RATIFICATIONS IN A BILATERAL EQUILIBRIUM

Under the reciprocity regime dictated by Article 21 of the Vienna Convention, within the range of mutually agreeable levels of treaty ratification, each state realizes that higher levels of mutual obligation are better than lower levels and chooses accordingly. Thus, if there are multiple mutually acceptable equilibria under reciprocity, the highest level of mutual ratification will be chosen.¹⁶ Depending on the relative magnitudes of s'_H , s'_L , and the content of the original treaty obligation s_T , each state might make reservations or ratify the treaty in full. Consider the alternative cases in turn.

Case i: Bilateral reservations happen when the two states prefer lower levels of obligation than that specified in the original multilateral treaty ($s'_H < s'_L < s_T$). Figure 1 shows the reaction functions of the two states. From the viewpoint of state H , if state L prefers too low a level of ratification, the best it can do is to adopt the same level of ratification: $s_H = s_L$. If the opponent state chooses too high a level of ratification, state H will not be forced to ratify at any level higher than its private optimum: $s_H = s'_H$. The reaction function of state H first follows the 45-degree line, and then becomes horizontal. Likewise, the reaction function of state L first follows the 45-degree line, and then becomes vertical. Both reaction functions stop at the level specified in the treaty s_T . With these reaction functions, the highest level of ratification mutually agreeable to the states s'_H is the equilibrium ratification level for the two states.

¹⁶ We appeal to the intuitive criterion as formulated by Cho and Kreps (1987) and Rasmusen (1989) to assume that among multiple equilibria, the parties always coordinate towards the equilibrium that is mutually preferred by the players.

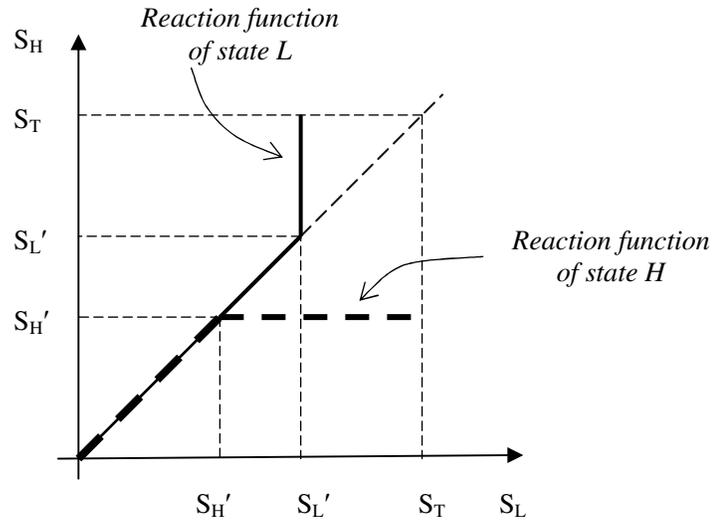


Figure 1: Bilateral Reservation Strategies
 - Equilibrium ratification: s_H'

Case ii: Unilateral reservation takes place when one state (state H) prefers a level of obligation lower than the treaty specification, while the other state (state L) is content with the treaty as originally formulated: $s_H' < s_T < s_L'$. Figure 2A shows that the reaction function for state H is similar to that in case i , while the reaction function for state L no longer has a kink because state L prefers too high a level of ratification. Given these reaction functions, the equilibrium ratification level for both states is again s_H' .

Case iii: No reservation occurs when both states prefer high levels of ratification: $s_T < s_H' < s_L'$. Figure 2B shows the reaction functions for both states. In this case, both states ratify the treaty in full and the equilibrium level of ratification for both states is consistent with the original treaty obligation s_T .

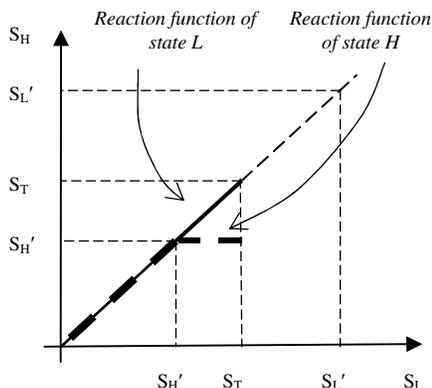


Figure 2A: Unilateral Reservation Strategy - Equilibrium ratification: s_H'

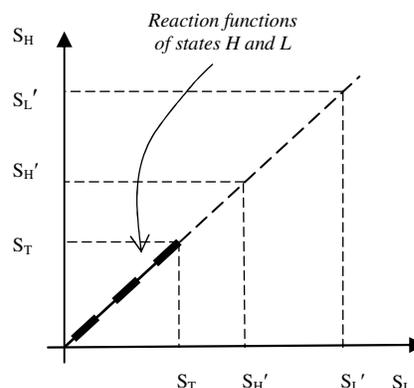


Figure 2B: No-Reservation Strategies - Equilibrium ratification: s_T

2.3. DISTRIBUTIVE EFFECTS OF BILATERAL RECIPROCITY UNDER ARTICLE 21

We now examine the distributive effects of the reservation process introduced by Article 21 of the Vienna Convention on the two representative states. We concentrate on the asymmetric impact of reservations subject to the reciprocity regime, comparing the outcome induced by Article 21 to the preexisting regime in which no unwanted reservations could be introduced. Following the same order of presentation, we investigate the effects in each case.

Case A. Bilateral reservations: H and L are both reserving states. As observed before, whenever the original treaty specifies a high obligation such that $s_H' < s_L' < s_T$, both states introduce reservations to the treaty and reach a level of mutual ratification s_H' . Since s_H' maximizes the payoff function for state *H* under unconditional reciprocity, state *H* is better off after the ratification process than under any other level of treaty obligation. It is not clear whether state *L* is better off or worse off after ratification. Recall that s_L' maximizes the payoff function under unconditional reciprocity for state *L*. The relationships $s_H' < s_L' < s_T$ imply that s_H' falls on the left hand side of the maximum and s_T falls on the right hand side of the maximum of the payoff function. Thus, the move from the original treaty obligation s_T to the lower ratification level chosen by the other state can either improve or worsen state *L*'s welfare. Thus, when

both states introduce reservations, the high-cost state is better off, but the welfare change for the low-cost state is indeterminate.

Case B. Unilateral reservation: H is a reserving state and L is a non-reserving state. The original treaty obligation falls between the privately optimal treaty levels for the two states, $s'_H < s_T \leq s'_L$. Here the high-cost state introduces a reservation. The low-cost state has no incentive to introduce a reservation, but can at least invoke the reciprocal effects of the high-cost state's reservation against such state.¹⁷ In this bilateral sub-treaty relationship, the equilibrium ratification s'_H is determined by the high-cost state. As in the last case, the high-cost state H is better off after the ratification process, since it achieves its first best treaty level under reciprocity. Unlike in the previous case, the low-cost state L is worse off because the equilibrium ratification s'_H is further from the optimal level of state L than the level of treaty obligation s_T . Thus, when there is a unilateral reservation, the welfare of the reserving state is always improved while the welfare of the non-reserving state is worsened.

Case C. No reservation: H and L are both non-reserving states. The treaty obligation is lower than the private optimal levels for the relevant states, $s_T \leq s'_H < s'_L$, so that neither state has an incentive to introduce a reservation even though both have an option to do so. Both states ratify the treaty in full in equilibrium. When no reservations are introduced by either state, welfare does not change after the ratification process.

2.4. THE MULTILATERAL SETTING

So far the bilateral relationship of representative states H and L which are parties to a multilateral treaty is considered. Now contemplate the multilateral effects of treaty ratification under Article 21 of the Vienna Convention with N participating states. Each state benefits from other states' acceptance and ratification of a treaty obligation, and incurs cost by agreeing to fulfill the treaty obligations by ratifying the treaty. When a uniform treaty obligation crumbles into a network of bilateral treaty obligations, the overall benefit of a participating state is determined by the sum of the benefits derived from each sub-treaty relationship in which it participates. The payoff for state i , P_i , is the sum of all

¹⁷ In this context, the non-reserving state obtains a lower treaty level than its ideal level, but avoids the costs of full treaty compliance in the face of the other state's partial ratification.

P_i^j where P_i^j is the payoff derived by state i from interacting with state j in the bilateral sub-treaty relationship, similar to those introduced previously. Let the level of treaty ratification of state j as it affects state i be denoted by s_{ji} and the level of treaty ratification of state i as it affects state j be denoted by s_{ij} . The benefit enjoyed by state i from the level of ratification by state j is $b_i s_{ji}$, and the cost incurred by state i for its level of treaty ratification with state j is $a_i s_{ij}^2$. The net payoff for state i from the treaty relationship with state j , P_i^j , is $b_i s_{ji} - a_i s_{ij}^2$ where $b_i > a_i$. Thus, the total payoff for state i from participating in the multilateral treaty is given by the summation of the bilateral payoffs from the various sub-treaty relationships and is given by:

$$(5) \quad P_i = \sum_{\substack{j=1 \\ j \neq i}}^N P_i^j = \sum_{\substack{j=1 \\ j \neq i}}^N (b_i s_{ji} - a_i s_{ij}^2)$$

The formulation of the states' payoffs in equation (5) assumes that state i 's benefit in entering in a treaty interaction with state j is independent from its interaction with other states. This condition implies that the ideal ratification level between two non-reserving states remains at s_T (full compliance with the treaty) irrespective of whether other states introduce reservations. Treaty ratification choices are strategically independent, which is reasonable in many situations. For example, the benefits derived from a treaty abating trade barriers between two states generally do not depend on whether other states ratify the trade treaty. Likewise, benefits derived by one state from an asylum treaty with another state do not depend on the choices of third-party states.¹⁸

As before, the optimal level of mutual ratification for state i in its relationship with any other state, say state j , could be found by maximizing the

¹⁸ Extensions of this model could contemplate strategic substitutes and strategic complements. The decision of one state to depart from full treaty compliance could alter the cost-benefit calculations of those who remain. If compliance levels are strategic substitutes, non-reserving states may increase their obligations beyond the level specified in the treaty. Examples include some environmental treaties, where failure of some states to ratify the treaty may need to be counterbalanced by higher preservation efforts by participating states. If compliance levels are strategic complements, non-reserving states may reduce their obligations below the specified treaty level. This may be the case when the non participation of some states reduces the benefits of participation for the other states. Examples include coordination treaties creating network externalities (e.g., technological standards), the value of which depends on the level of participation and resulting diffusion.

payoff assuming unconditional reciprocity $b_i s_{ij} - a_i s_{ij}^2$. To maximize this payoff, state i would choose $s'_i = b_i/2a_i$ - the optimal level of ratification under unconditional reciprocity.

The N states participating in the formation and ratification of the treaty are ranked from 1 to N such that state 1 is the highest cost state, and state N is the lowest cost state:¹⁹

$$(6) \quad \frac{a_1}{b_1} > \frac{a_2}{b_2} > \dots > \frac{a_N}{b_N}, \text{ or, } s'_1 < s'_2 < \dots < s'_N$$

In the process of bargaining for a mutually acceptable treaty level, it is likely that the states would agree to an intermediate level of treaty obligation. This is true because states are expected to bargain until the sum of their payoffs under reciprocity is maximized. The aggregate payoff function for all signatory states is maximized when states undertake a level of treaty obligation s_T falling between the privately optimal levels of ratification for the states at both ends of the cost distribution: state 1 and state N .²⁰ In other words, there exists a state M between 1 and N such that the treaty obligation s_T satisfies:

$$(7) \quad s'_M = \frac{b_M}{2a_M} < s_T < \frac{b_{M+1}}{2a_{M+1}} = s'_{M+1}$$

Recall that if the optimal level of ratification under unconditional reciprocity is greater than or equal to the original treaty obligation s_T , the state would be a non-reserving state. Thus, all states from $M+1$ to N are non-reserving states. On the other hand, states 1 through M have incentives to introduce reservations to the treaty. To study the reciprocal reservation mechanism provided in Article 21 of the Vienna Convention in this multilateral context, we consider three separate cases.

¹⁹ For convenience we assume strict inequality for ranking the cost-benefit ratios. The results can be modified if weak inequalities are involved.

²⁰ As an extremely simplified example, take the payoff functions for state H and L discussed earlier. The aggregate payoff function under reciprocity is $b_H s - a_H s^2 + b_L s - a_L s^2$. The level of treaty obligation that maximizes this payoff is $s_T = (b_H + b_L)/2(a_H + a_L)$. It can be proved that s_T is greater than $b_H/2a_H$ and less than $b_L/2a_L$. For other details, see the discussion on reciprocal social optimum in Fon and Parisi (2003b).

2.5. NON-RESERVING STATES

The first group of cases includes situations in which state i is a non-reserving state. Here $i \geq M + 1$ and $s'_i = \frac{b_i}{2a_i} > s_T$. The content of the treaty relationship between a non-reserving state i and another state j depends on whether j is itself a reserving or non-reserving state. If j is a non-reserving state ($j \geq M + 1$), the bilateral sub-treaty relationship between the two states is characterized by full ratification (s_T) since neither state has an incentive to introduce a reservation. Thus, the opportunity to introduce unilateral reservations made possible by Article 21 of the Vienna Convention has no impact on the welfare of state i when going through the process of ratification with another non-reserving state.

On the other hand, when i is a non-reserving state and j is a reserving state ($j \leq M$), then state j must be higher cost compared to state i . The unilateral reservation introduced by state j leads to an equilibrium level of treaty ratification s'_j . The welfare of state i , the non-reserving low-cost state, is negatively affected by the possibility offered by Article 21 of the Vienna Convention to introduce unilateral reservations.

Recall that the total payoff for state i from the multilateral treaty is given by the summation of the various bilateral payoffs with all other signatory states, as in (5). The equilibrium payoff for state i after the ratification process under Article 21 should naturally be separated into two parts. The first part represents payoffs obtained from interacting with reserving states (1 to M), and the second part is given by payoffs from interacting with other non-reserving states ($M + 1$ to N). Recalling that the non-reserving states are those ranked from $M + 1$ to N , the equilibrium payoff for a non-reserving state i is given by the following.

$$(8) \quad P_i = \sum_{j=1}^M (b_i s'_j - a_i s_j'^2) + \sum_{\substack{j=M+1 \\ j \neq i}}^N (b_i s_T - a_i s_T^2)$$

[i a non-reserving state, $i \geq M + 1$]

The equilibrium payoff in (8) shows that state i suffers an insufficient level of ratification in M cases, but receives the full treaty payoff in the remaining $N - M - 1$ bilateral sub-treaty relationships.

2.6. RESERVING STATES

In the second group of cases, state i is a reserving state: $i \leq M$ and $s'_i = \frac{b_i}{2a_i} < s_T$. The interaction of a reserving state i with another state depends on whether the latter is a reserving or non-reserving state. If the other state j is a non-reserving state, state i is higher cost compared to state j , with $j \in \{M+1, \dots, N\}$. The mutual level of treaty ratification is determined by the high-cost state i 's ratification at level s'_i . The welfare of state i , the reserving state, is improved by the opportunity to introduce unilateral reservations under Article 21 of the Vienna Convention.²¹

When state i interacts with another reserving state j , the resulting equilibrium level of ratification depends on whether state i or state j is higher cost.²² Since all states are ranked in decreasing order in terms of relative cost, state i is relatively high cost in comparison to state j , when such a state falls in the range $j=i+1, \dots, M$. The equilibrium level of ratification s'_i in these cases is determined by the high-cost state i . Here, the welfare of state i , the reserving state, is also improved by the opportunity to introduce reservations against other reserving, and yet lower cost, states.

Different results are obtained when state i is a lower cost state relative to the other reserving states, 1 through $i-1$. In spite of the common use of reservations, each bilateral sub-treaty relationship is characterized by an equilibrium level of ratification s'_j which is determined by the relatively high-cost state j , where $j \in \{1, \dots, i-1\}$. In each of these interactions with relatively high-cost states, the changes in welfare for the low-cost state i are indeterminate under the process of reservation and ratification set forth by Article 21. This result reflects the indeterminacy already observed in case A above.

The equilibrium payoff for state i following various reservations under Article 21 should again be separated into two parts. The first part is given by payoffs from interacting with other reserving and relatively high-cost states (1 to $i-1$). The second part is given by payoffs from interacting with other reserving and relatively low-cost states ($i+1$ to M) or non-reserving states ($M+1$ to N). Recalling that the reserving states are those ranked from 1 to M , the equilibrium payoff for a reserving state i is given by the following.

²¹ This is discussed in case B above. In this specific case where i is the reserving state, state i plays the role of H and j plays the role of L .

²² This is discussed in case A above.

$$(9) \quad P_i = \sum_{j=1}^{i-1} (b_i s'_j - a_i s_j'^2) + \sum_{j=i+1}^N (b_i s'_i - a_i s_i'^2)$$

[i a reserving state, $i \leq M$]

The equilibrium payoff in (9) shows that state i suffers an insufficient level of ratification in $i-1$ cases but obtains its optimal payoff in the remaining $N-i$ bilateral sub-treaty relationships.

Comparing the payoff for a non-reserving state in (8) with the payoff for a reserving state in (9), we see that the reserving state is faced with undesired reservations from fewer states than the non-reserving state since there are fewer terms in the first summation in (9) than in the first summation in (8). Meanwhile in the remaining bilateral relations, the reserving state controls the level of treaty obligations in a larger number of cases, while the non-reserving state is constrained by the level of the treaty s_T and obtains the full treaty payoff in fewer cases. This means that the process of treaty reservations set forth by Article 21 gives an advantage to reserving states over non-reserving states.

2.7. THE HIGHEST COST STATE

Given our criterion for ranking states, state 1 is the highest cost state. Given a treaty obligation s_T , the highest cost state would be a reserving state. The possibility for state 1 to introduce unilateral reservations under Article 21 of the Vienna Convention implies that this state's reservation would affect the levels of treaty ratification in its relationship with all other states. Thus the highest cost state's welfare is improved by the opportunity to introduce reservations in every bilateral sub-treaty interaction. As a special case of the equilibrium payoff formulated for the general case of a reserving state, the first term in equation (9) disappears since no other reserving state has a higher cost than state 1. Consequently, the equilibrium payoff for state 1 with reciprocal effects of reservations is the following.

$$(10) \quad P_1 = \sum_{j=2}^N (b_1 s'_1 - a_1 s_1'^2)$$

The equilibrium payoff in (10) shows that state i obtains its optimal payoff in all $N-1$ sub-treaty relationships, and never suffers excessive treaty reservations by other states.

Comparing the payoff for the highest-cost state in (10) with the payoff for the representative reserving state in (9), we see that the highest-cost state never

faces undesired reservations from other states. This can be seen from the fact that the first summation in (9) disappears in (10). The highest-cost state effectively controls the level of ratification so that its optimal treaty level prevails in all bilateral treaty relations with other states. This shows that treaty reservations set forth by Article 21 not only give an advantage to reserving states over non-reserving states, but they also give an increasing advantage to states that prefer lower levels of international treaty obligations.

2.8. OTHER CONSIDERATIONS

As a first step towards understanding the impact of Article 21 on the states' obtainable payoffs, our model treated the content and membership of the underlying treaty as exogenous. The prospect of unilateral reservations affects terms of the underlying treaty and often affects states' incentives to negotiate treaties. When states can anticipate ratification strategies of other states, they may take such effects into account in determining the content and participation to the treaty. Given the highlighted workings of Article 21, there are different ways in which heterogeneous states could react to the reservations regime in a multilateral treaty.

First, states may anticipate the bias effect of unilateral reservations under Article 21 and choose not to enter into multilateral treaty arrangements with high-cost states. High-cost states could corrode the benefits of low-cost states by lowering commitment levels at the ratification stage. This helps explain why treaty membership is confined in many situations to relatively homogeneous states that share a common goal with similar cost-benefit ratios. Thus, different groups of states form different plurilateral treaties with limited participation, rather than attempting to coalesce in a multilateral treaty with universal participation. Examples include regional treaties for economic development, trade treaties among industrialized countries, and outer space exploration agreements. By entering into treaties with fewer participants with similar interests, states ensure a higher level of homogeneity and reduce the risk of treaty corrosion via unilateral reservations.

Second, states may realize that benefits can be obtained from international cooperation extended to heterogeneous states. The heterogeneity of states often implies, however, that different states have different ideal treaty ratification levels. The reservation mechanism set forth by Article 21 gives high-cost states a greater opportunity to reach their ideal points relative to low-cost states. The joint-payoff maximizing arrangement frequently lies between the ideal levels of high-cost and low-cost states. In these situations, treaty arrangements are not the fruit of consensus, but of compromise. Often, high-cost states can be enticed to undertake higher levels of treaty participation with

side payments or lateral concessions. In these cases, an implicit price can be found in the side concessions made by one state to one or more other states in the process of treaty negotiations. For example, states whose privately optimal levels of treaty obligations below the aggregate optimum may be induced to accept higher levels of obligation in exchange for side benefits of some sort. Sufficient side payments could reduce the degree of heterogeneity between states by turning a high-cost state into a relatively low-cost state, or vice versa. Once the joint-payoff optimum is achieved, the content of the treaty could still be undermined by subsequent reservations of states that prefer lower levels of obligation. It is thus in the interest of all states to exclude ex post unilateral reservations. Our analysis illustrates why in practice, when treaties involve side payments or lateral concessions, parties often opt out of the regime of Article 21, with an explicit preclusion of ex post unilateral reservation under Article 19(a) of the Vienna Convention.

Third, heterogeneous states may anticipate the effect of Article 21 and yet wish to extend participation to as large a group of states as feasible. This may be the case for treaties for which the objectives can be better achieved with widespread participation, such as environmental, economic integration, and human rights treaties. Here compromise leads participating states to undertake asymmetric obligations such as different timing for implementing new emission standards, partial waivers for developing countries, and accommodating different cultural traditions in the interpretation of human rights principles. Indeed, “common but differentiated responsibilities” are specified in Principle 7 of the Rio Declaration on Environment and Development and “equitable and appropriate contributions” are included in Article 4 in the United Nations Framework Convention on Climate Change.

Another specific example is the WTO regime, where many heterogeneous states have contracted on a number of issues ranging from trade in goods to intellectual property rights. The WTO contains several provisions on special and differential (s’n’d) treatment in favor of developing countries. This amounts to a situation where the treaty imposes asymmetric obligations on the negotiating states. The WTO avoids reservations by anticipating the potential effect of ex post reservations and agreeing to reach an equilibrium that lowers the burden on high-cost states. Thus, the treaty outcome can be seen as anticipating the bias of Article 21, adjusting the initial treaty arrangement to the likely outcome of a uniform treaty corroded by subsequent reservations. The s’n’d-type provisions have the dual advantage of allowing parties to maximize the joint advantage ex ante and to increase the transparency and predictability of the final result through explicit negotiations. In situations such as environmental and human rights protection treaties, widespread treaty participation is more important than

uniformity of international obligations and it may be appropriate to allow occasional non-strategic reservations necessitated by internal political or constitutional constraints of the participating states.

Finally, even if it is possible for states to foresee the likely ratification choices of other states, it may be difficult to adjust the substantive terms of the treaty to anticipate such results. Treaty provisions are drafted for general and uniform application, even though the generality and uniformity of the effects may be undermined by subsequent reservations. It would be difficult to draft treaty provisions that anticipate the complex bilateral and multilateral effects of unilateral reservations. In the practice of international law where treaty reservations are observed, not every reservation can be attributed to a lack of rational foresight by the signatory states.

3. CONCLUSIONS

Under the reservations regime in force prior to the Vienna Convention, unanimity principles governed the effects of unilateral reservations at the time of treaty accession and ratification. Under such a regime, reservations become effective only if all other states give their consent. This prevents non-reserving states from being made worse off by unilateral reservations introduced by another signatory state at the time of ratification.

The strength of the reservations regime introduced by the Vienna Convention lies in complex multilateral treaties, where significant negotiating (and renegotiating) cost savings can be achieved when minor deviations from the agreement are allowed through reservations. This paper unveils an interesting effect of the process of treaty ratification introduced by the Vienna Convention on the Law of Treaties. Behind the apparent neutrality of the reciprocity principle, reservations under Article 21 create a bias where states with a comparative disadvantage in treaty implementation have a systematic advantage. Given the opportunity to introduce reservations, Article 21 tilts the balance in favor of high-cost and low-benefit states who can take advantage of the mechanism of reciprocity. The bias brought about by the introduction of the reciprocity principle in treaty reservations thus had potential distributive effects between different groups of states.²³

²³ From an economic point of view, states are expected to take into account these distributive effects when “pricing” the treaty agreement. However, in spite of many similarities between treaties and contracts, multilateral treaty obligations are generally undertaken by states without any side payment. In these situations no price system is capable of capturing the distributive effects of the reservation rule.

These effects of Article 21 never became a matter of open contention during several years of preparatory work that preceded development of rules on treaty reservations. The main argument for changing the existing reservation rules was based on the need for greater flexibility brought about by the increasing diffusion of multilateral treaties in world politics. By giving states greater flexibility in accepting terms of a treaty, Article 21 avoids undesirable holdups in the ratification process and ultimately fosters greater state participation. On the other hand, states that opposed changes in the law of treaty reservations feared that any departure from the unanimity principle would contradict past practice and run the risk of casting a shadow of ambiguity over treaty language.²⁴ In wrestling with this problem, the U.N. General Assembly asked the International Court of Justice to offer its guidance on the question of reservations, and also turned to the International Law Commission for its expertise.²⁵ Neither of these official opinions indicates an explicit awareness of the bias effects of the reciprocity principle.

In spite of the lack of open discussion of this matter, it is interesting to look back at the peculiar split between supporters and opponents of Article 21. Reciprocity under Article 21 was strongly advocated by less developed countries, such as India and other non-European countries, and was opposed by more established European nations and the United States.²⁶ In light of our findings, note that poorer or developing states often face higher treaty implementation and compliance costs or enjoy lower benefits from the fulfillment of international obligations, while richer nations generally advocate and are willing to undertake higher levels of international obligations. Several treaties, for example, explicitly impose more stringent obligations on wealthier

²⁴ The General Assembly asked the International Law Commission to “study the question of reservations to multilateral conventions both from the point of view of codification and from that of progressive development (resolution 478 (V) of 16 November 1950). See also *Report of the International Law Commission on the work of its forty-ninth session 12 May_18 July* U.N. GAOR, 52nd Sess., Supp. No. 10, U.N. Doc. A/52/10 (1997) discussed in Parisi and Sevcenko (2002).

²⁵ Even after the Court rendered its opinion, the ILC input still was relevant because the Court, relying on the abstract nature of an advisory opinion, left many questions unanswered about how a regime would work that did not require unanimous acceptance of reservations.

²⁶ The debate that followed India’s request for accession to the Inter-Governmental Maritime Organization is informative of the positions taken by the various nations on the general issue of reservations. Documentation is available at GAOR, 14th session, annexes, a.i. 65 (1959). Position of India is described in A/4188 and that of the Secretary General in A/4235. Rosenne (1989) suggests that the fall of the unanimity rule and allowance of reservations is a product of the demise of European dominance in international relations. The United States ultimately failed to ratify the Vienna Convention on the law of treaties. In practice the United States closely scrutinizes reservation provisions prior to signing a multilateral treaty, to avoid applicability of other default mechanisms of reservation.

or industrialized states. The Montreal Protocol on Ozone-Depleting Substances takes this to an extreme by having wealthier nations subsidize 100% of the poorer nations' compliance costs. This treaty outcome is a good illustration of our "hidden bias" hypothesis, since poorer states bear no costs and receive some benefits.²⁷

This paper has identified the source of the bias in the unequal opportunity to introduce reservations. A high-cost state, one who gains less relative to the costs it bears than other states, wishing to avoid application or to reduce the content of a given treaty provision, has the opportunity to do so via unilateral reservations. No symmetric opportunity is given to other states who desire to add provisions to a treaty or to raise the content of a treaty obligation under an existing provision. High-cost nations thus have an intrinsic advantage over low-cost states in shaping the content of multilateral treaty relations. The actual allocation of this advantage across different categories of states depends a great deal on context. Although this bias may often favor poorer and developing nations that face higher cost-benefit ratios in treaty implementation, it may in other situations favor larger and powerful nations, whose well-being depends less critically on international cooperation. For example, since NAFTA the United States is much more reserved in sharing its intellectual property rights with other countries. Thus, in general, the Vienna Convention may not create universal systematic bias, given that a state may be a high-cost state with regards to one kind of treaty, but be a low-cost state with respect to another kind of treaty.

The applicability of our model is limited in the important case of human rights treaties. In these cases, a universality of membership is deemed highly desirable, as the value to each member increases as the membership of a human rights treaty increases. The actual obligations of human rights treaties are often expected to be aspirational, which is opposite to what is assumed in the model, where treaty language creates real and binding obligations. Further, the benefits of human rights treaties are public goods and they do not derive from the bilateral observance of these treaties between signatory states. A state enjoys any benefits from the adherence to human rights specified in a treaty by other signatory states, whether the state is itself a member of the treaty or not.

²⁷ Note that the roles of developing and developed states are reversed in some cases, and the developed nations are the high-cost states. For example, in human rights treaties, while the costs of implementation are likely to be higher for developing states, in practice there is little expectation that these countries will meet the high standards specified in multilateral human rights treaties. On the other hand, under strict scrutiny of the many international watch-dog organizations, the more advanced states are expected to rigidly adhere to the agreements from these treaties and are the de facto high-cost states.

Lastly, the cost to a state of adhering to human rights treaties does not increase in the number of treaty membership.

Further research should examine the applicability of our results to other situations where reciprocity constrains the strategic behavior of different parties, for example, most favored nation clauses. Different alternative mechanisms that may help avoid or minimize the identified limitations of Article 21 of the Vienna Convention should also be considered.

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